



# Software Graduation Project

Creative Designs

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## **DISCLAIMER:**

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## **1 Abstract:**

A phone application and a website to sell products that are designed, manufactured and assembled by a member of the team involved in the completion of this work, as he owns his own project in the name of "HADI CNC" in the production of antiques and home decorations that are produced according to the customer's desire.

This work is to display the products in an appropriate manner and work to facilitate their access to those interested in these products and present them to them and facilitate their request according to the details that each person wants and buy them instead of ordering them through the business owner's page on social media.

This application and website provide the user (the buyer) with a view of our products and the ease of communication with us and clarifying what he wants from products with his own details that are made for him and he gets the best product with the best efficiency.

This project is based on the dart programming language which is the Flutter UI framework, Which includes the Application Programming Interface (API) of Node Js, with the help of the package manager of Yarn and the help of service called Strapi which was used to create the API, as for the services that we used for the Data Base we used the Cloud Data Base service of MongoDB Atlas, and for our users payments we used the payment processing services called Stripe.and in addition of using FireBase that we Used it for the Notification System. and we managed our customers orders and questions via bot using the kommunicate services

## **2 Introduction:**

This project consists of two parts, the first is a mobile application, which the user can download from the Play Store as it shows the customer what we offer of new products and designs and enables the buyer to choose what he wants easily and clarify the details of what he wants without the need to communicate with the business owner directly, as the user can In the event that he want to ask about anything we offer a chat bot that will help him to find what he want.

The second part of the project is a website that the user can access in an easier way than the application, because there is no need for a client to download the application.

The main objective of the project, first, is to facilitate the presentation of products to customers, to know what they want through their request for the product and to know the length of time for their requests to reach them by tracking their parcels through the presence of the tracking feature in the application or website without referring to the employer directly.

Secondly, to make it easier for the business owner to know the requests in detail and prepare them for customers, as well as examine his sales during a specific period of time, for example within a week or a month, and know the best-selling sales through statistics found in the application, and know the opinions of customers and their evaluation of our performance and products. All this is an alternative to using the sales page on Social Media.

## **3 Constraints & Earlier Coursework:**

### **3.1 Constraints Limitations:**

We have faced many constrains while creating “Creative Designs” the most major one was that we didn’t work with Flutter before thus so our knowledge of dart was few. And these are some constrains that we have faced other than the major one :

#### **3.1.1 Dart Language:**

The Dart language on which our project depends is relatively new compared to other languages, you will find limited resources to learn it and you may also encounter a large number of problems that have not been solved yet.

#### **3.1.2 The continues updates of dart language:**

As said above because dart is a new language it has a limited resources to learn from and because it’s a new language it have many update in a small period of time which that change the way we call the functions and use the attributes so we have to look for the new way to use the functions and attributes and use a modern dependencies that is compatible with the dart version and the null-safety.

#### **3.1.3 The App size:**

After finishing the app, we have noticed that its size is very enormous considering we that we used a cloud database it turned out that this is a one of the Flutter problems Since it has the built-in widgets instead of using platform widgets, Flutter’s apps minimum size is over 4MB [1], which is definitely bigger than

native Java (539KB) and Kotlin (550KB) apps[2], that made us tend to avoid animations, bring the number of libraries and packages to a minimum.

### **3.2 Earlier Coursework:**

The object-oriented principles that we took in java course were very useful to use in implementing many features of this app since Dart is considered an OOP language too. And as for the advance software and critical thinking, the skills that we gained from taking these courses like how to prepare for the development and do the research needed for this stage helped us a lot in finishing this project. As for the web course we used the Node Js in our backend and that helped us a lot that we had learnt how to use it.

## **4 Literature Reviews:**

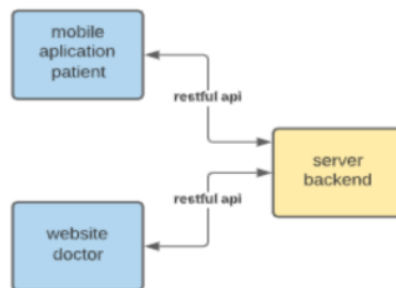
Nowadays the world is living a pandemic thus so a close down is happening around the world that restrict many people from going out and many shops from opening up ,thus so many shops have switched their services to E-services. From here it came the idea of “Creative Designs” which you can request, order and buy any item of decoration that is a CNC related from the shop without a direct contact with the workers and the owner of the shop. This application and website were created for the people who are far away from the shop location or for the people who don’t want a direct contact with others so the “Creative Designs” helps you to look and order any item that you would like to decorate your house with and the item will come to you at home.

## 5 Methodology:

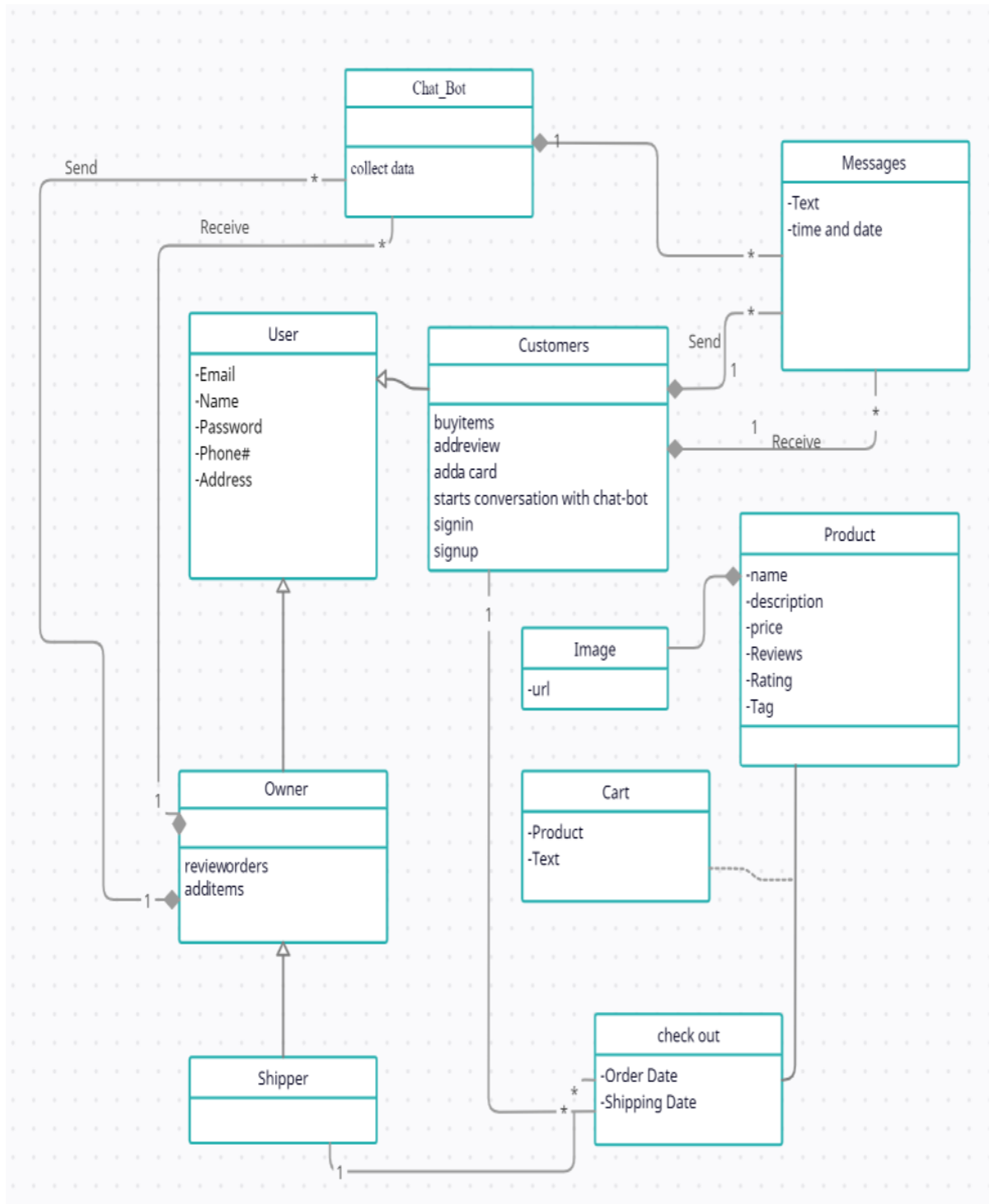
In this project we have used a cross platform framework which it's Flutter that provide us applications that can work on (Android/IOS) and it can also work as website in addition to that we have used Node js and Strapi services for building the API for the backend.

### 5.1 Database:

In our project we have used the MongoDB Atlas which is considered a cloud storage that we used it to store different resources which we used in our application. We managed to use the database as a client-server architecture as shown in the figure below. Also, we used firebase functionality to make a push notification action.

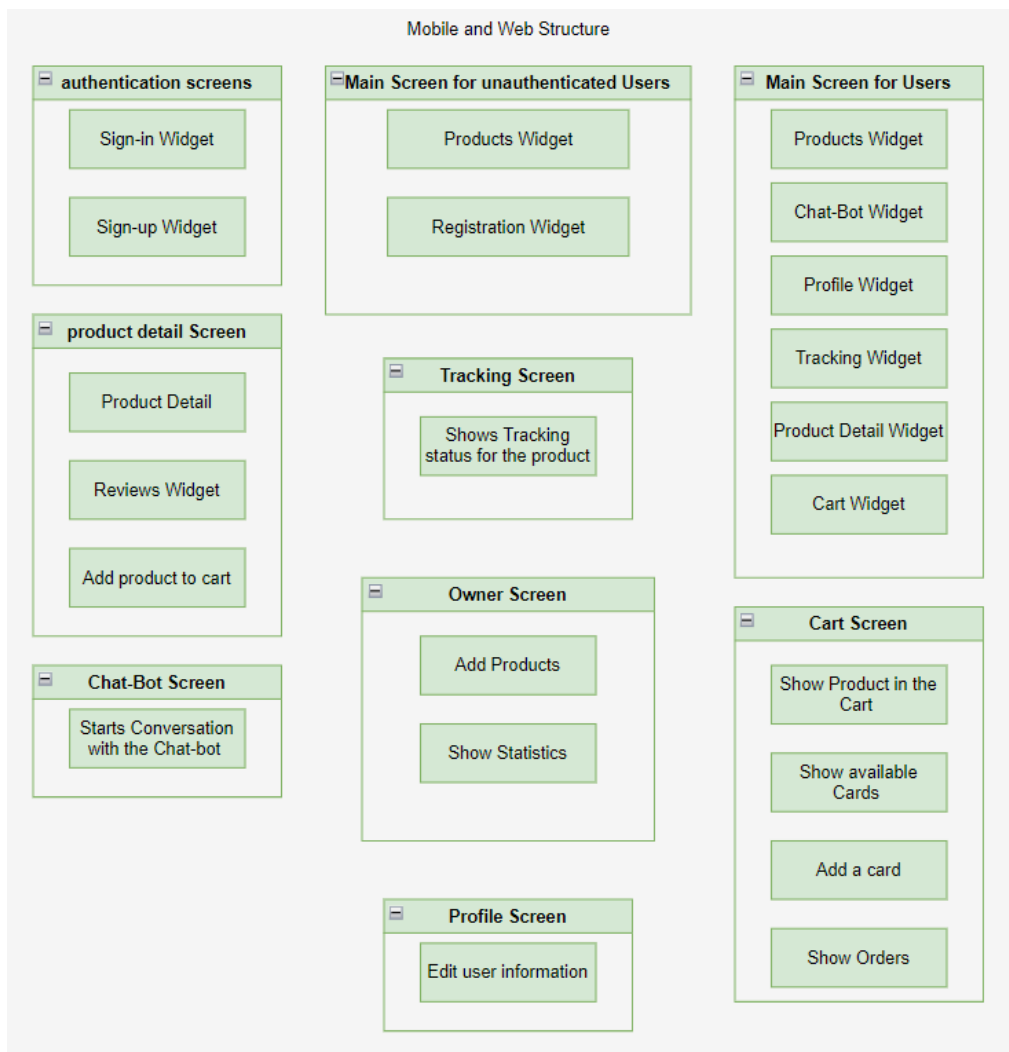


## 5.2 Uml Diagram:



### 5.3 project Structure:

We design the web and application structure in the beginning of the development process the web structure is same as the application structure because it was made through the cross platform of Flutter,the app/web structure is shown in the figure below.



## **5.4 Nonfunctional Requirements:**

### **5.4.1 Availability:**

The project can be used by any user Whether he was using a phone or using a web browser.

### **5.4.2 Security:**

We used the “JSON web token” authentication and we encrypted all passwords using hash algorithms

### **5.4.3 Acceptability:**

We have made the user interface as simple as possible and the platform is easy to use by general .

### **5.4.4 Portability:**

We can assure that our project can run on all of the platforms (Android, IOS and Web) without making any error.

### **5.4.5 Maintainability:**

We use in our design patterns like (singleton and controller).

## 5.5 functional Requirements and System Features:

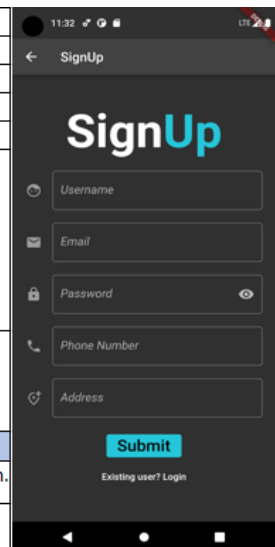
Creative Design features are designed and arranged to be able to provide convenience to the customer and ease of handling of the application and the site. Its users have the best shopping experience and choose our products according to their desires.

### System Features:

#### 5.5.1 Sign-Up

Users can create new accounts with email and password, and we use the Before Create life cycle method to attach the new user with a cart and a Stripe account to manage Payments .

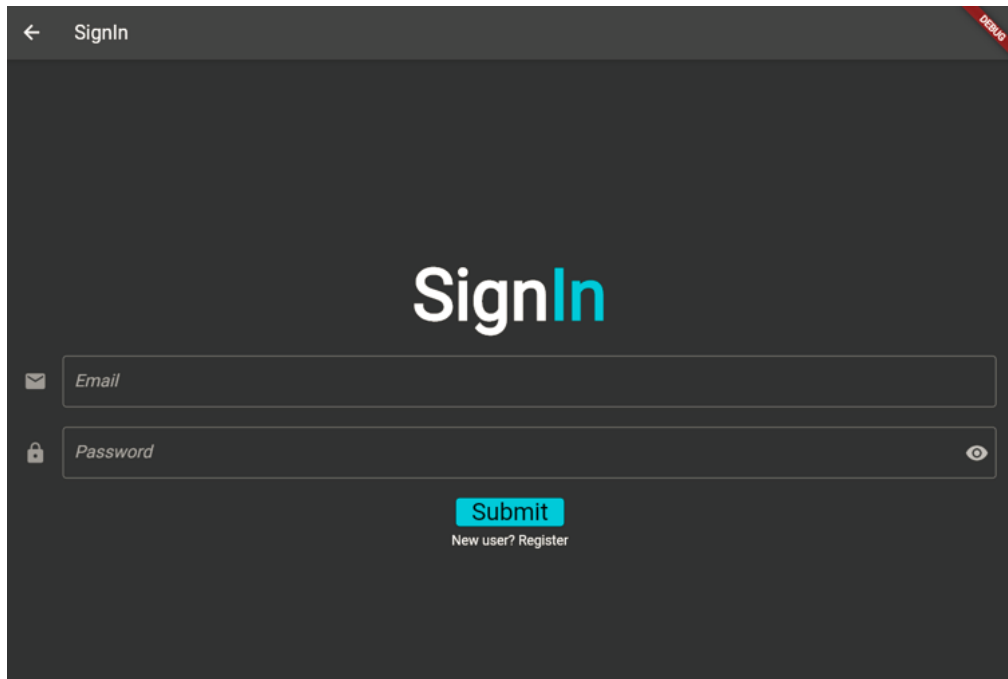
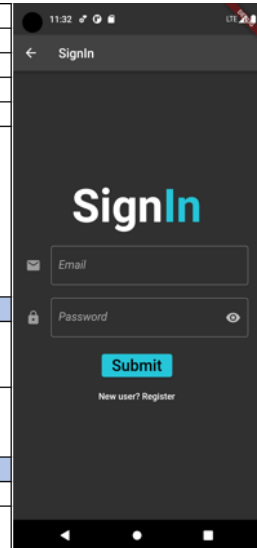
<b>Use Case Name</b>	Sign Up User
<b>Use Case ID</b>	1
<b>Actor</b>	Customer
<b>Description</b>	Describes Creating New Account In The System
<b>Precondition</b>	No Precondition Needed Except For Downloading The App
<b>Normal Flow</b>	<ol style="list-style-type: none"><li>1. The system prompts the user for username, email, password, phone number and address.</li><li>2. The user enters the username and the wanted password.</li><li>3. The system verifies the username to make sure it's not used before.</li><li>4. The system creates new account and move the user to the Log-in screen.</li><li>5. Use case ends.</li></ol>
<b>Alternative Flow</b>	<ol style="list-style-type: none"><li>1. The system validation of username turns out to be falsy</li><li>2. The system displays appropriate error message for the user about the wrong thing in the chosen username.</li><li>3. The user re-enters valid Username &amp; password</li></ol>
<b>Post Condition</b>	
<b>Success</b>	User creates an account in the system and gets sent to the Log-in screen.
<b>Failure</b>	User enters invalid email or username and gets sent back to the Sign-up screen again.



## 5.5.2 Log-In

user can login to the system by providing email and password.

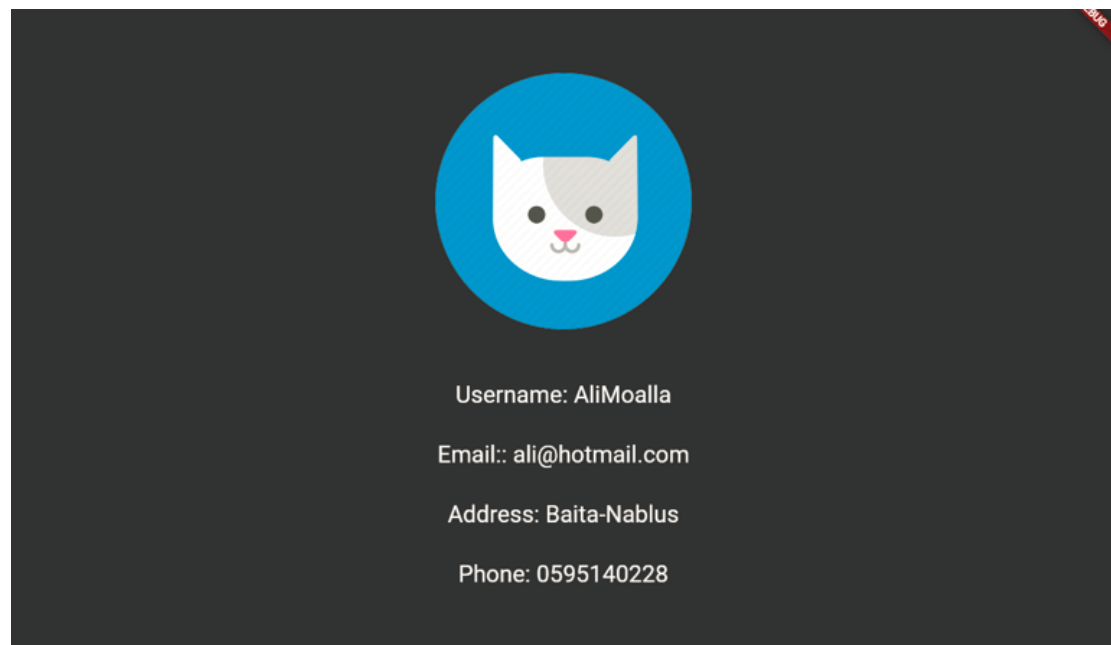
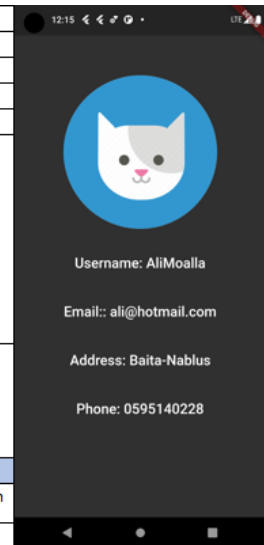
<b>Use Case Name</b>	Login User
<b>Use Case ID</b>	2
<b>Actor</b>	Registered User
<b>Description</b>	Describes a user Logging onto The System
<b>Precondition</b>	The User has account created in the system
<b>Normal Flow</b>	<ol style="list-style-type: none"> <li>1. The system prompts the user for email and password .</li> <li>2. The user enters the email with password.</li> <li>3. The system verifies the email address to make sure it's there's an account assigned to them.</li> <li>4. The system verifies the password for the found account.</li> <li>5. The user is sent to the home page as a logged in user.</li> <li>6. Use case ends.</li> </ol>
<b>Alternative Flow</b>	
<b>Email address is not correct</b>	<ol style="list-style-type: none"> <li>1. Information error message is shown to the user.</li> <li>2. The user re-enters the email address.</li> </ol>
<b>Password isn't correct</b>	<ol style="list-style-type: none"> <li>1. Error message is shown to the user</li> <li>2. The user re-enters the password again.</li> </ol>
<b>Post Condition</b>	
<b>Success</b>	User logs into the system and gets sent to the home screen.
<b>Failure</b>	User is sent back to the <b>Log-in</b> screen again with an appropriate error message.



### 5.5.3 Edit Profile

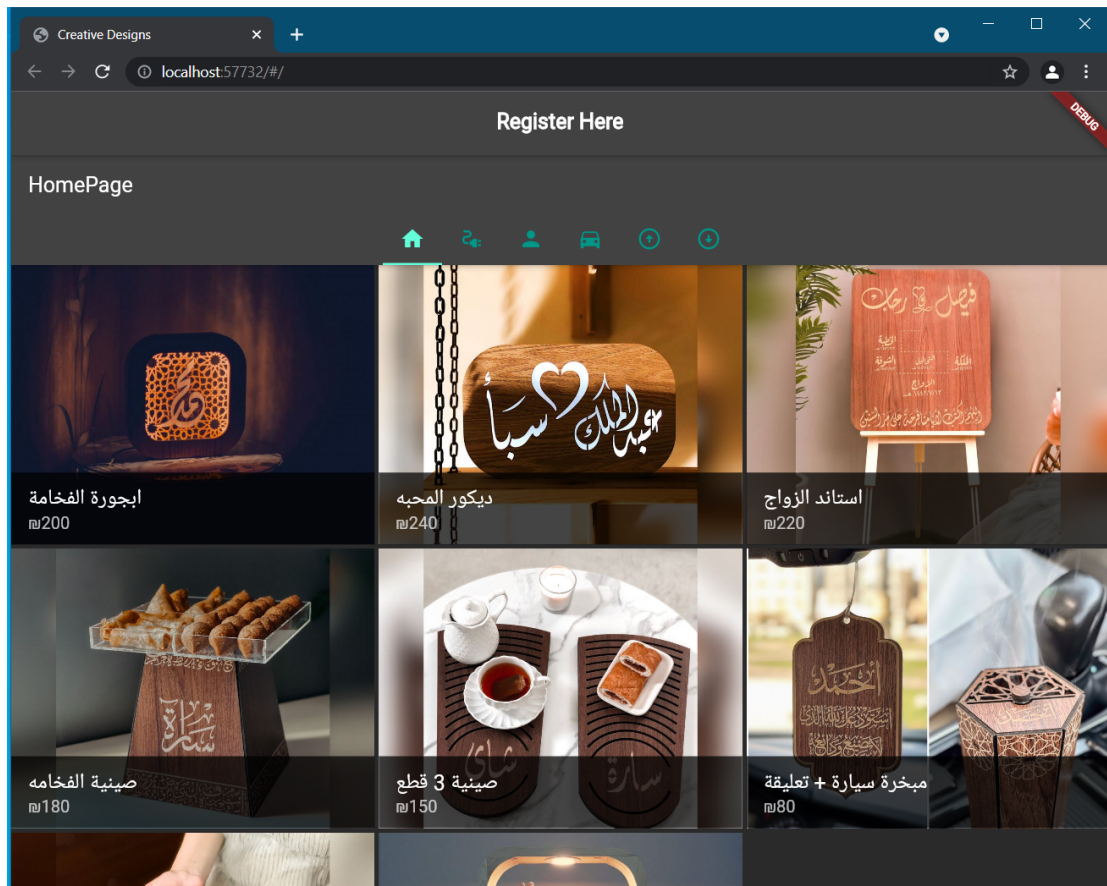
Users is able to change their profile picture ,username, email address and Phone number.

<b>Use Case Name</b>	Edit Profile information
<b>Use Case ID</b>	3
<b>Actor</b>	Logged in user
<b>Description</b>	Describes a user editing the profile's information & picture
<b>Precondition</b>	The user is logged onto the system.
<b>Normal Flow</b>	<ol style="list-style-type: none"> <li>1. The system provides a form for the user to enter information.</li> <li>2. The user enters the wanted information(email address, username, phone number and address).</li> <li>3. The system verifies the username to make sure it's not used before.</li> <li>4. The system verifies the email address to be valid and not used in any other account in the system.</li> <li>5. New information is updated and shown in the profile in real time.</li> <li>6. Use case ends.</li> </ol>
<b>Alternative Flow</b>	<ol style="list-style-type: none"> <li>1. The system validation for the username or email address turns out to be falsy .</li> <li>2. The system displays appropriate descriptive message of the error happening.</li> <li>3. The user re-enters information or cancels the process of editing the profile.</li> </ol>
<b>Post Condition</b>	
<b>Success</b>	The profile information is updated and the user is sent back to the profile screen
<b>Failure</b>	Nothing in the profile is changed.



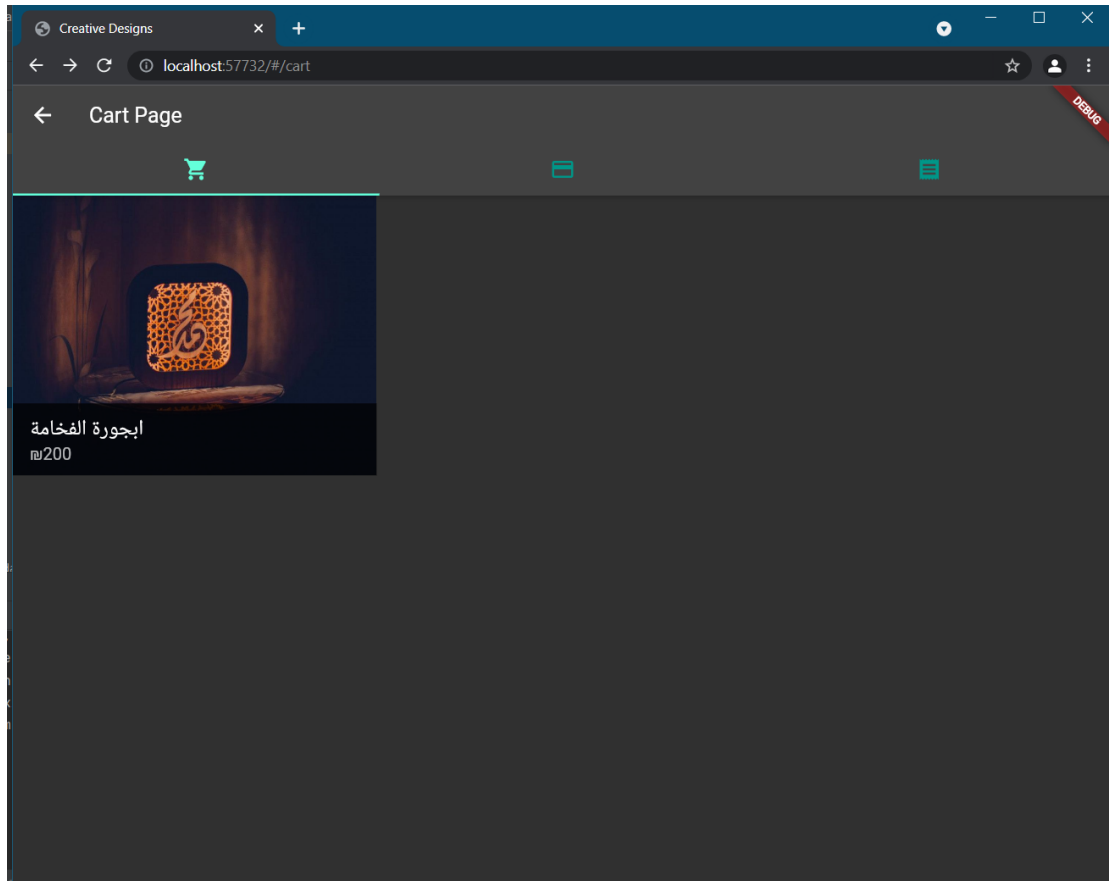
### 5.5.4 Home Page

Home Page contains all products in our store.

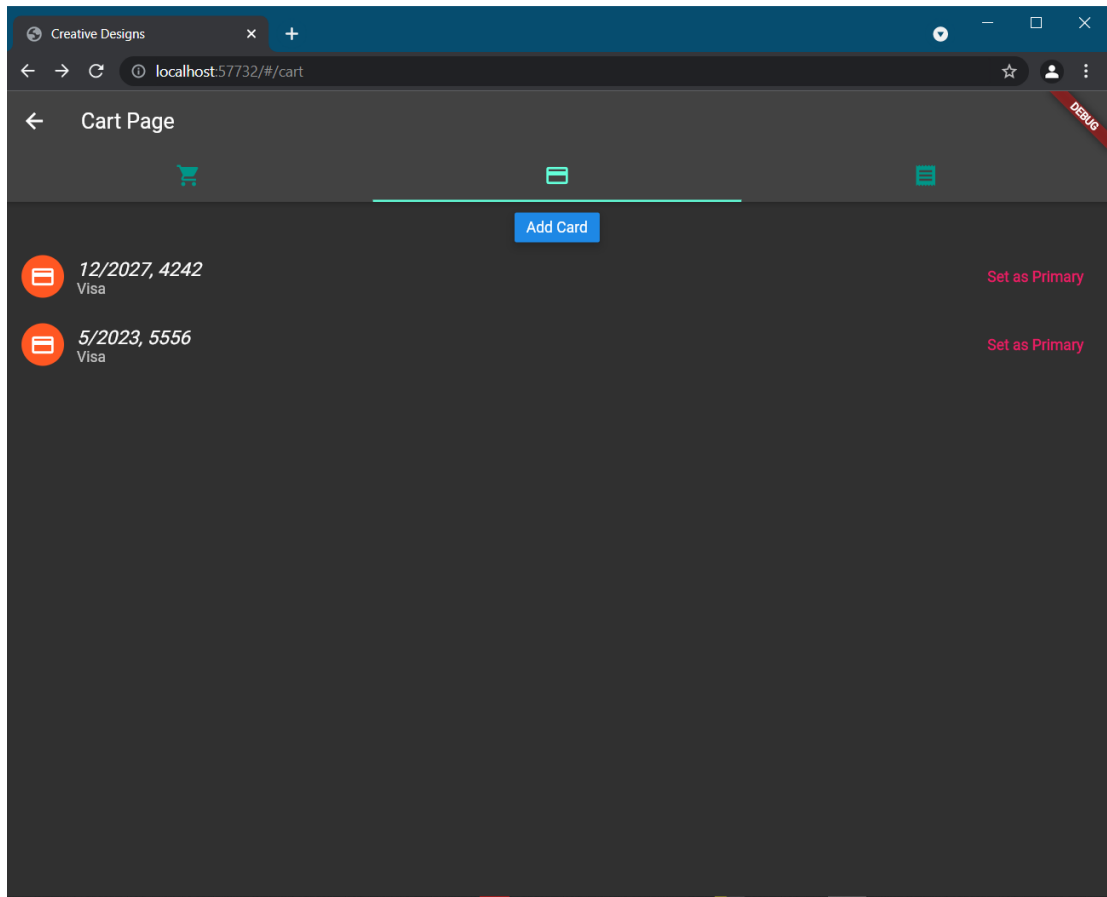


### 5.5.5 Cart Page

Cart Page contains the products or all products that the customer has selected and he/she wants buy it.

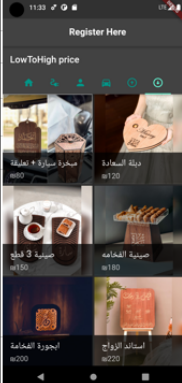


On this page, the customer chooses the payment method and the system checks the card if it is valid for use or not. After that, the customer chooses the products he wants to buy from the Cart page.




### 5.5.6 Sort Products

System user is able to sort all products provided by it based on price, "ascending"

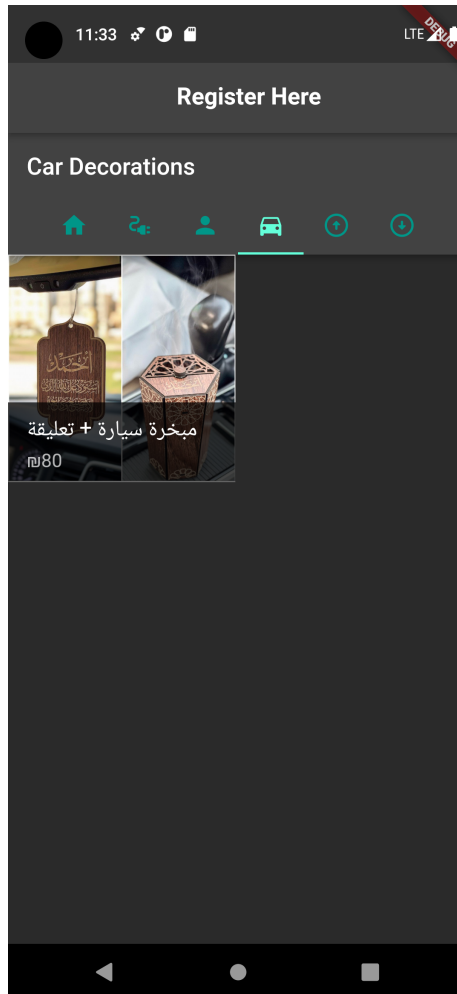
<b>Use Case Name</b>	Sort Products by the price	
<b>Use Case ID</b>	7	
<b>Actor</b>	Logged in user	
<b>Description</b>	Describes a user sorting products based on the price.(Hight to Low and Low to Hight)	
<b>Precondition</b>	The user should be logged in.	
<b>Normal Flow</b>	<ol style="list-style-type: none"> <li>1. The system gives a user the choice between ascending or descending order of products.</li> <li>2. The user choose between (ascending and descending) price that products would be sorted based on.</li> <li>3. The system shows all te products depending on the user's choices.</li> <li>4. Use case ends.</li> </ol>	
<b>Post Condition</b>	The user is sent back to the (Hight to Low ) or (Low to Hight) screen.	

System user is able to sort all products provided by it based on price, "descending"

<b>Use Case Name</b>	Sort Products by the price	
<b>Use Case ID</b>	7	
<b>Actor</b>	Logged in user	
<b>Description</b>	Describes a user sorting products based on the price.(Hight to Low and Low to Hight)	
<b>Precondition</b>	The user should be logged in.	
<b>Normal Flow</b>	<ol style="list-style-type: none"> <li>1. The system gives a user the choice between ascending or descending order of products.</li> <li>2. The user choose between (ascending and descending) price that products would be sorted based on.</li> <li>3. The system shows all te products depending on the user's choices.</li> <li>4. Use case ends.</li> </ol>	
<b>Post Condition</b>	The user is sent back to the (Hight to Low ) or (Low to Hight) screen.	

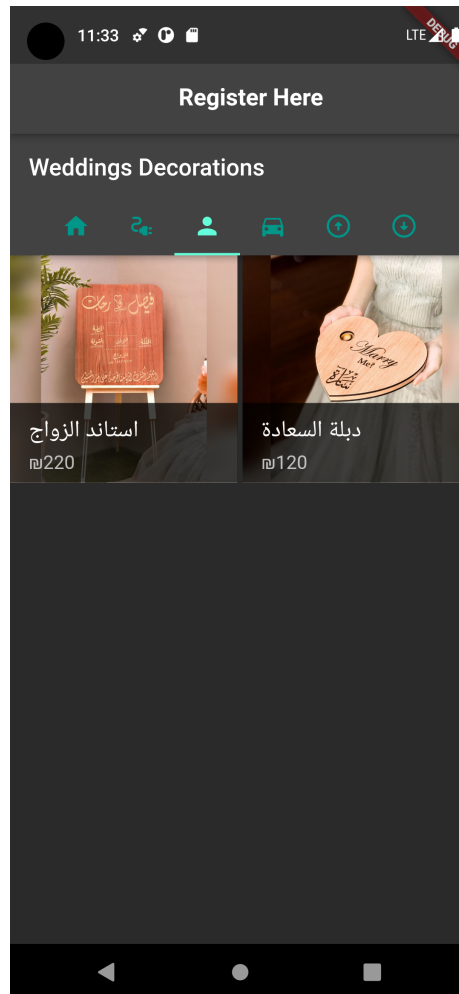
### 5.5.7 Car Decoration

A content-based recommendation system is used to provide users with auto products, such as accessories, medals, etc.can be found in a special tab on the home page.



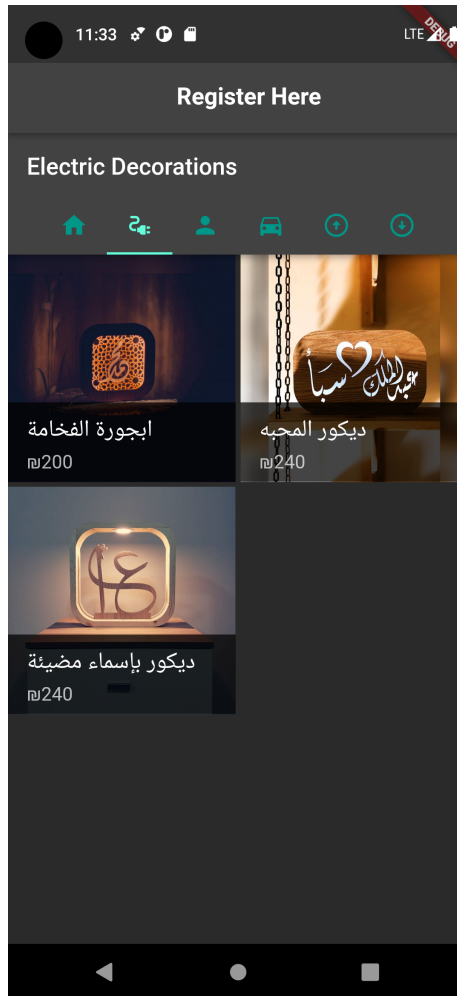
### 5.5.8 Wedding Decoration

The content-based recommendation system is used to provide users with wedding accessory products, such as ring holder and guest book ,etc., can be found in a special tab on the home page.



### 5.5.9 Electric Decoration

The content-based recommendation system is used to provide users with products that are included in their lighting design, such as table lamp and antiques, etc., that can be found in a special tab on the home page.




### 5.5.10 View Product Details

A dedicated screen to display the details of each product such as product dimensions, product material, material thickness and other details.



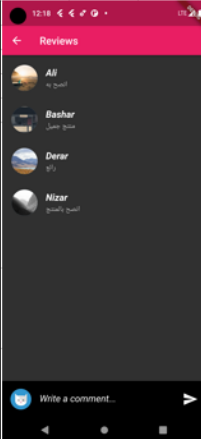
### 5.5.11 ChatBot

The customer can find out details and information about our products through the chatbot.

<b>Use Case Name</b>	Send message in Chatbot	
<b>Use Case ID</b>	6	
<b>Actor</b>	Logged in user	
<b>Description</b>	Describes a user creating using the real time chatbot	
<b>Precondition</b>	The user should be logged in.	
<b>Normal Flow</b>	<ol style="list-style-type: none"> <li>1. The system provides the user with a textfield to write the message.</li> <li>2. The user write the message and sens it.</li> <li>3. The message is sent to the Chatbot.</li> <li>4. Use case ends.</li> </ol>	
<b>Alternative Flow</b>	<ol style="list-style-type: none"> <li>1. The system check for message if exists in chatbot or no .</li> <li>2. The system send message "أنا مجرد رد آلي سوف يقوم صاحب المتجر بالتواصل معك بأقرب وقت".</li> </ol>	
<b>Post Condition</b>	New message is sent to the Chatbot.	

### 5.5.12 Review a products

Customers can review on products from the product's home page, all reviews are displayed on the review page where each users can provide more than one review.

<b>Use Case Name</b>	Review a product	
<b>Use Case ID</b>	4	
<b>Actor</b>	Logged in user	
<b>Description</b>	Describes a user reviewing a certain product.	
<b>Precondition</b>	The user should be logged in.	
<b>Normal Flow</b>	<ol style="list-style-type: none"> <li>1. The user can review a product from its products page.</li> <li>2. The system prompts the user for the review or comment of the product.</li> <li>3. The user enters the wanted review.</li> <li>4. The system saved the review and shows the product's reviews in its main page and the user's reviews are shown in the reviews screen.</li> <li>6. Use case ends.</li> </ol>	
<b>Alternative Flow</b>	<ol style="list-style-type: none"> <li>1. If the user has reviewed the product previously the system shows the stored review for the user and prompts the user to add another review.</li> <li>2. The system saves the new review of the user on the product.</li> </ol>	
<b>Post Condition</b>	<ol style="list-style-type: none"> <li>1. The user's review of the product is stored in the system.</li> <li>2. User's review are saved in the Reviews screen .</li> <li>3..Product's reviews are shown in specific tab of the single product screen.</li> </ol>	



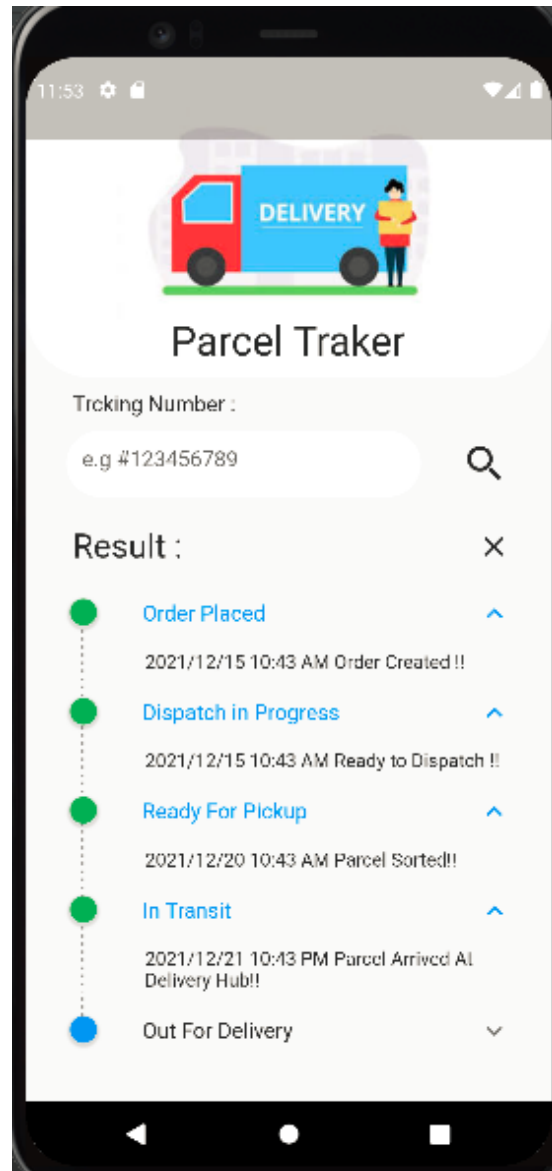
### 5.5.13 Rate a products

Each customer is able to rate a products on a scale of 5, average rating is affected by all customers, and all rated products are saved in a separate screen.

<b>Use Case Name</b>	Rate a product out of 5
<b>Use Case ID</b>	5
<b>Actor</b>	Logged in user
<b>Description</b>	Describes a user rating on a scale of 5 stars.
<b>Precondition</b>	The user should be logged in.
<b>Normal Flow</b>	<ol style="list-style-type: none"><li>1. The user can rate a product from its products page.</li><li>2. The system prompts the user for the rate of the product.</li><li>3. The user enters the wanted rate out of 5.</li><li>4. The system saved the rate and shows the product's rate in its main page.</li><li>5. Use case ends.</li></ol>
<b>Alternative Flow</b>	<ol style="list-style-type: none"><li>1. If the user has rate the product before, the system asks the user to only update the rating value.</li><li>2. The system saves the new rating value.</li></ol>
<b>Post Condition</b>	<ol style="list-style-type: none"><li>1. The Average rating of the product is updated real time.</li><li>2. User's rating are saved in the Rating screen .</li></ol>

### 5.5.14 Tracking Order

After making the purchase from our store, the customer can track the order until it reaches it by entering the order's Id on the tracking page that accesses from the home page.



## **6 Conclusion**

### **6.1 Summary**

I think that there are many stores or applications on the Internet, each of them specializes in a particular product, and there are stores with everything, but I did not find in Palestine a special store for displaying and selling “CNC LASER“ products despite the spread of these machines in our country, I think this store will have a strong turnout by customers and users.

### **6.2 Future Work**

We will officially launch “Creative Design” to become available to users and used by the employer to develop his business, We will make the app wide-ranging, i.e. it becomes a private store for CNC products in general, through sections on the app’s home page. We also want to add more features to the store owner, especially annual sales accounts, and renew products at every time specified by the store owner.

## References

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